What is claimed is:

1. A semiconductor device comprising:

a substrate having an insulating layer formed thereon;

a silicon layer having a thickness ts formed on the insulating layer, the silicon layer including a first area having a first impurity concentration of Df cm^{-3}, and a second area having a second condition of Dp cm^{-3};

a fully-depleted MOSFET formed in the first area of the silicon substrate; and

a partially-depleted MOSFET formed in the second area of the silicon layer;

wherein the semiconductor device satisfies the following condition:

$28\ nm \leq ts \leq 42\ nm$

$Df \leq 9.29 * 10^{15} * (62.46 - ts)$

$Df \leq 2.64 * 10^{15} * (128.35 - ts)$

$Dp \geq 9.29 * 10^{15} * (62.46 - ts)$

$Dp \geq 2.64 * 10^{15} * (129.78 - ts)$.

2. A semiconductor device according to claim 1, wherein the device satisfies condition of $Df \leq 3.00 * 10^{15} * (102.67 - ts)$.

3. A semiconductor device according to claim 1, wherein the device satisfies condition of $Dp \geq 3.29 * 10^{15} * (125.70 - ts)$.

4. A semiconductor device according to claim 1, wherein the thickness of the silicon layer has a range 38 nm to 42 nm, the impurity concentration Df is equal or more than $1.9 * 10^{17}$ cm^{-3}, and the impurity concentration Dp is equal or less than $2.2 * 10^{17}$ cm^{-3}.

5. A semiconductor device according to claim 1, wherein the thickness of the silicon layer has a range 33 nm to 37 nm, the impurity concentration of Df is equal or less than $2.5 * 10^{17}$ cm^{-3}, and the impurity concentration Dp is equal or more than $2.7 * 10^{17}$ cm^{-3}.

6. A semiconductor device according to claim 1, wherein the thickness of the silicon layer has a range 28 nm to 32 nm, the impurity concentration of Df is equal or less than $2.7 * 10^{17}$ cm^{-3}, and the impurity concentration Dp is equal or more than $3.2 * 10^{17}$ cm^{-3}.